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10/573,883	02/15/2007	Nicolas Drolet	19226-US-NP	9927
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/573,883

Applicant(s)

DROLET ET AL.

Examiner

MATTHEW W. SUCH

Art Unit

2891

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 October 2009.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 March 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/GS-08)
- _____ Paper No(s)/Mail Date 20 August 2009.

- 4) ☐ Interview Summary (PTO-413)
- _____ Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. The restriction requirement between Group I and Group II, as set forth in the Office action mailed on 8 September 2009 is hereby withdrawn because a search of the prior art shows that the compounds with and without the "Z" copolymer group are obvious variants.

In view of the above noted withdrawal of the restriction requirement, applicant is advised that if any claim presented in a continuation or divisional application is anticipated by, or includes all the limitations of, a claim that is allowable in the present application, such claim may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application.

Once a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. See *In re Ziegler*, 443 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on 20 August 2009 is being considered by the examiner.

Drawings

3. The drawings were received on 29 March 2006. These drawings are accepted.

Abstract

4. The abstract of the disclosure is objected to because the word "conugated" in Line 3 should read "conjugated". Correction is required. See MPEP § 608.01(b).

5. The disclosure is objected to because of the following informalities: all instances of the word "substituant" should read "substituent"; "galium-induim" on Page 17, Line 7 should read "gallium-indium"; "phtalocyanine" on Page 18, Line 2 should read "phthalocyanine"; "suquentially" on Page 19, Line 23 should read "sequentially"; and "acethylene" on Page 25, Line 6 should read "acetylene". Appropriate correction is required.

Claim Objections

6. Claim 1 is objected to because of the following informalities: the word "substituant" in Line 8 should read "substituent" and the word "acethylene" in Line 13 should read "acetylene". Appropriate correction is required.

7. Claim 5 is objected to because of the following informalities: the word abbreviation of "(CPC)" in Line 3 should read "(RCPCR)", see disclosure on Page 25, Lines 15-16. Appropriate correction is required.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 4 and 9-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Czerw ('328).

a. Regarding claims 4 and 14-15, Czerw teaches an organic device comprising an active material including a conjugated 2,7-carbazolenevinylene derivative (such as the compound of PPV-AFCAR, see Para. 0011, 0031-0032 and Fig. 2, at least).

Regarding the recitation of "where 2,7-carbazolenevinylene monomers can be alternated with...[continuing until the end of the claim]", the examiner notes that such language does not require that the conjugated 2,7-carbazolenevinylene derivative be alternated or have the structure of Formula 2, but merely suggests that it can be. Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. See MPEP § 2106 II C.

The Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See, e.g., *In re Pearson*, 181 USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re*

Casey, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). See MPEP §2114. The recitation of "being one of an Organic Field Effect Transistor (OFET) and an Organic Photovoltaic Cell (OPC)" does not distinguish the present invention over the prior art of Czerw who teaches the structure as claimed. This further applies to claims 14 and 15.

b. Regarding claims 9-11, the manner in which the claim is written of "being an OPC, wherein said 2,7-carbazolenevinylene derivative is mixed with a second active material" does not set forth that the scope of the claimed device further comprises a second active material. Instead this language merely sets forth a use for the material of mixing it with a second active material. Claims 10 and 11, merely recite what the second active material is and do not ever set forth that the scope of the claimed device actually further comprises the second active material.

c. Regarding claim 12, Czerw teaches that the device further comprises a hole transport layer (Elements 8 and 10 in Fig. 3 transport holes) and an electron transport layer (Elements 10 and 12 in Fig. 3 transport electrons) and the conjugated 2,7-carbazolenevinylene derivative of PPV-AFCAR can be included in Element 10, which transports both holes and electrons.

d. Regarding claim 13, as noted above, since the claims fail to require that the conjugated 2,7-carbazolenevinylene derivative must be of Formula 2, setting $y=0$ for all blocks is also not required.

10. Claims 4-5, 7-11 and 13-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Leclerc ('197).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

e. Regarding claims 4 and 14-15, Leclerc teaches an organic device comprising an active material including a conjugated 2,7-carbazolenevinylene derivative (such as the compounds of PCP, CCC, CTTC, BPCBP, PCP-CN and H-CPC-H in Fig. 3, at least).

Regarding the recitation of "where 2,7-carbazolenevinylene monomers can be alternated with...[continuing until the end of the claim]", the examiner notes that such language does not require that the conjugated 2,7-carbazolenevinylene derivative be alternated or have the structure of Formula 2, but merely suggests that it can be. Language that suggests or makes optional but does not require steps to be performed or

does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. See MPEP § 2106 II C.

The Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See, e.g., *In re Pearson*, 181 USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). See MPEP §2114. The recitation of "being one of an Organic Field Effect Transistor (OFET) and an Organic Photovoltaic Cell (OPC)" does not distinguish the present invention over the prior art of Leclerc who teaches the structure as claimed. This further applies to claims 14 and 15. Also Leclerc teaches these uses (see Para. 0041, for example).

f. Regarding claim 5, Leclerc teaches that the 2,7-carbazolenevinylene derivative is 1,4-bis(vinylene-(N-methyl-7-hexyl-2-carbazole))phenylene (see Para. 0102, for example).

g. Regarding claim 7, Leclerc teaches that the 2,7-carbazolenevinylene derivative is [Poly (N-(2-ethylhexyl-2,7-carbazolenevinylene- co-2,5-bis(diphenylamine)-1,4-phenylenevinylene-co-((4-(2-ethylhexyloxy)-phenyl)-bis-(4'-phenylene)amine))] (see Para. 0107, for example).

- h. Regarding claim 8, Leclerc teaches that the 2,7-carbazolenevinylene derivative is [Poly (N-(4-hexyloxyphenyl)-2,7-carbazolenevinylene-alt-(3-hexyl-2,5-thiophenevinylene))] (see Para. 0110, for example).
- i. Regarding claims 9-11, the manner in which the claim is written of "being an OPC, wherein said 2,7-carbazolenevinylene derivative is mixed with a second active material" does not set forth that the scope of the claimed device further comprises a second active material. Instead this language merely sets forth a use for the material of mixing it with a second active material. Claims 10 and 11, merely recite what the second active material is and do not ever set forth that the scope of the claimed device actually further comprises the second active material.
- j. Regarding claim 13, as noted above, since the claims fail to require that the conjugated 2,7-carbazolenevinylene derivative must be of Formula 2, setting $y=0$ for all blocks is also not required.
11. Claims 4 and 9-15 are rejected under 35 U.S.C. 102(e) as being anticipated by Leclerc ('172).

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the

inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

k. Regarding claims 4 and 14-15, Leclerc teaches an organic device comprising an active material including a conjugated 2,7-carbazolenevinylene derivative (see general formula in Para. 0014 with Z being ethylene, as set forth in Line 3 of Para. 0016).

Regarding the recitation of "where 2,7-carbazolenevinylene monomers can be alternated with...[continuing until the end of the claim]", the examiner notes that such language does not require that the conjugated 2,7-carbazolenevinylene derivative be alternated or have the structure of Formula 2, but merely suggests that it can be. Language that suggests or makes optional but does not require steps to be performed or does not limit a claim to a particular structure does not limit the scope of a claim or claim limitation. See MPEP § 2106 II C.

The Examiner notes that a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See, e.g., *In re Pearson*, 181 USPQ 641 (CCPA); *In re Minks*, 169 USPQ 120 (Bd Appeals); *In re Casey*, 152 USPQ 235 (CCPA 1967); *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). See MPEP §2114. The recitation of "being one of an Organic Field Effect Transistor (OFET) and an Organic Photovoltaic Cell (OPC)" does not distinguish the present invention over

the prior art of Leclerc who teaches the structure as claimed. This further applies to claims 14 and 15.

l. Regarding claims 9-11, the manner in which the claim is written of "being an OPC, wherein said 2,7-carbazolenevinylene derivative is mixed with a second active material" does not set forth that the scope of the claimed device further comprises a second active material. Instead this language merely sets forth a use for the material of mixing it with a second active material. Claims 10 and 11, merely recite what the second active material is and do not ever set forth that the scope of the claimed device actually further comprises the second active material.

m. Regarding claim 12, Leclerc teaches that the device further comprises a hole transport layer and an electron transport layer and the conjugated 2,7-carbazolenevinylene derivative is included in each (see Para. 0019).

n. Regarding claim 13, as noted above, since the claims fail to require that the conjugated 2,7-carbazolenevinylene derivative must be of Formula 2, setting $y=0$ for all blocks is also not required.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2891

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leclerc ('197).

Leclerc teaches the compounds of claim 4 and many examples, but does not explicitly set forth the compound of 1,4-bis(vinylene-(N-hexyl-2-carbazole))phenylene. However, It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the compound of 1,4-bis(vinylene-(N-hexyl-2-carbazole))phenylene merely by following Example 6 but using compound 28 in place of compound 34 of example 6. Such modification is obvious to one of ordinary skill in the art because Leclerc teaches all of the starting compounds and reactions necessary for making 1,4-bis(vinylene-(N-hexyl-2-carbazole))phenylene. One would have been motivated to form 1,4-bis(vinylene-(N-hexyl-2-carbazole))phenylene since these compounds are of low cost and the optical and electrical properties can be tuned (see para. 0003, for example).

14. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Leclerc ('197) in view of Tang ('431).

Leclerc teaches that the compound of claim 4 is part of the active layer of a OPC device (see Para. 0041, for example), but does not disclose the conventional layers of the hole transport layer and the electron transport layer that make up the active layer.

However, Tang teaches the conventional OPC device comprising a hole transport layer (Element 18 with p-type electron donor compounds; Col. 12, Line 16) and an electron transport layer (Element 20 with n-type electron acceptor compounds; Col. 12, Line 18). It would have been obvious to one of ordinary skill in the art at the time the invention was made to form the 2,7-carbazolenevinylene derivative active layer of Leclerc with the hole transport layer and electron transport layer as set forth by Tang. One would have been motivated to do so in order to form a rectifying p-n junction to convert light into electrical charges (see Col. 4, Lines 56-68).

Contact Information

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to MATTHEW W. SUCH whose telephone number is (571)272-8895. The examiner can normally be reached on Monday - Friday 9AM-5PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kiesha Bryant can be reached on (571) 272-1844. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Matthew W. Such/
Examiner, Art Unit 2891